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TABLE OF CONTENTS

VOLUME 4 ISSUE I (JANUARY – JUNE 2024)

P. No.

1. **Gift City: An Overview of Prevailing and Prospective Aircraft Leasing Structures in India**..... 1-5

   Karan Nimish Vakil

2. **The India-United States BASA is Broken: Can it be Fixed?**..... 6-13

   P. Paul Fitzgerald

3. **Beyond Capacity-Building: "Downstreaming" Space Technologies through New Space Collaborations**.....14-19

   Jessica Los Banos

4. **Airport Development in Indonesia: Quo Vadis?**.....20-26

   Ridha Aditya Nugraha

5. **Challenges of Space Security Governance** 27-33

   Dr. Rajeswari Pillai Rajagopalan

6. **Role of the IATA in Airport Governance and Sustainability Practices in India: A Case Study of the Guwahati Airport** 34-39

   Kanchan Yadav

7. Time for an Indian National Space Security Policy? 40-45

Adithya Variath

8. Evaluating the Responsibility of ICAO to Tackle Climate Change 46-52

Dr. Deva Prasad M.

GIFT CITY: AN OVERVIEW OF PREVAILING AND PROSPECTIVE AIRCRAFT LEASING STRUCTURES IN INDIA

Karan Nimish Vakil[*]

Abstract

Air India and IndiGo attracted significant attention recently with record aircraft orders, underscoring India's position as the fastest-growing commercial aviation market globally. The potential for India to evolve into a major aviation hub hinges on government initiatives to cultivate a conducive business environment. Over 80% of fleets at airlines like IndiGo and SpiceJet comprise of leased aircraft. Ireland is currently the global leader in aircraft leasing, benefiting from favourable tax treaties and policies that attract lessors. In a strategic move to challenge this status quo, the Indian government has designated 'aircraft lease' as a financial product under the International Financial Services Centre Act 2019, offering significant tax incentives to lessors operating within the GIFT City Special Economic Zone. However, foreign lessors remain hesitant due to concerns over the nascent SEZ framework, limited financing options, and recent insolvency issues faced by Go First, which exacerbate apprehensions regarding asset repossession. For India to actualise its ambition of becoming a global aviation leasing hub, it is imperative that it undertakes comprehensive reforms to reinforce regulatory certainty, augment investor confidence, and attract foreign direct investment into its leasing ecosystem.

Keywords: Aircraft Leasing - Double Taxation Avoidance Agreements (DTAA) - GIFT City - GoFirst – Ireland

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Indian commercial air carriers Air India and IndiGo commanded the lion's share of attention at the recent biennial Paris Air Show as the former's record order of 470 aircraft was outdone by the latter's order of 500. India houses the fastest-growing commercial aviation market in the world. Given its geographical location and rapid construction of world-class aviation infrastructure, it has been long prophesized to become a global aviation hub capable of rivalling the dominant commercial air carriers of the Middle East. As private players make strides towards making India into a global commercial aviation hub, the onus is now on the Government of India to take appropriate steps towards creating a positive business climate that its commercial air carriers will need to grow and prosper.

Contrary to popular belief, commercial airlines do not own all of the aircraft in their fleet. The fleet of most commercial airlines will likely consist of owned and leased aircraft, with the latter outnumbering the former. Aircraft leasing is not dissimilar from the leasing of any other capital-intensive asset insomuch that it simply involves the leasing of the asset (in this case, aircraft) by the lessor to the lessee for a fixed and limited duration of time in exchange for monthly rental payments. Leasing is done to alleviate the financial burden of buying aircraft and, thus, to simultaneously increase the flying capacity of the commercial airline. For context, a single Airbus A320 neo aircraft, which dominates Indigo's current fleet, would cost approximately USD 110 million to buy but approximately USD 300,000 to lease per month. Thus, with a given amount of capital, more aircraft can be leased than bought at a given point in time. Statistically, over half of the world's aircraft used for commercial purposes are owned by leasing companies, who then lease these aircraft to commercial airlines. For example, over 80% of Indigo and SpiceJet's respective fleets comprise of leased Aircraft. This percentage is currently (standing at 40%) but will soon change over the next few years as a larger portion of the 470 aircraft gets delivered on a lease rather than on an ownership basis.

Only a handful of jurisdictions have recognised and capitalised on the leasing structure that dominates aircraft transactions worldwide. Of these jurisdictions, Ireland has been and continues to be the global capital from which aircraft lessors operate. Notably, Ireland's Double Taxation Avoidance Agreements (DTAA) are crafted to relieve aircraft lessors of certain tax payments due in the jurisdiction from which the aircraft operates. India's own DTAA with Ireland allows for "Profits

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derived by an enterprise of a Contracting State from the operation or rental of ships or aircraft in international traffic and the rental of containers and related equipment which is incidental to the operation of ships or aircraft in international traffic shall be taxable only in that Contracting State" under Article 8(1).

Consequent to the above provision, rental payments received by aircraft lessors situated in Ireland from Indian commercial air carriers, such as Air India, Indigo, SpiceJet, etc., for the use of aircraft are not taxed at source in India. This is then coupled with further domestic tax benefits for aircraft lessors situated in Ireland, cumulatively resulting in tax payments amounting to a fraction of what would have been payable outside Ireland, that is, if the aircraft lessor had been a tax resident elsewhere. In turn, benefits for Ireland come in the more obvious forms of economic development stimulation, increased employment, resource development and transfer, etc., which would be the envisioned outcome of any species of foreign direct investment. The country that the aircraft is leased into and operates from, by entering into a DTAA with Ireland, is able to attract aircraft lessors to lease aircraft into the country, thereby stimulating the growth of the commercial aviation sector and also the economy as a whole. It is noteworthy here that the commercial aviation sector currently contributes to as much as 5% of India's gross domestic product, creating 4 million jobs in the process.

The Government of India has recently taken a bold step towards attempting to challenge Ireland's place as the global haven for aircraft lessors. With a view to facilitating the initiation of aircraft leasing business from India, the Government has notified 'Aircraft lease' as a financial product under Section 3(1)(d) of the International Financial Services Centre Act 2019, thereby, providing various tax incentives to foreign aircraft lessors to relocate to or set up Special Purpose Vehicles (SPVs) at the Special Economic Zone (SEZ) of Gujarat International Finance Tec (GIFT) City.

Aircraft lessors intending to avail themselves of the SEZ at GIFT City may do so by first establishing a local company, limited liability partnership or a trust with a prescribed minimum capital requirement, the quantum of which depends on the type of aircraft lease that the entity enters into as lessor of the aircraft. Aircraft leases are broadly categorized into finance leases and operating leases. While in the case of finance leases, the ownership of the asset may pass to the lessee at the end of the

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lease term, in the case of operating leases, the ownership is retained by the lessor at the end of the lease term. The minimum capital requirement for an entity intending to lease aircraft by way of a finance lease is USD 3 million, and for an entity intending to lease aircraft by way of an operating lease in USD 200,000.

As far as tax benefits are concerned, some of the most appealing reductions are in the form of a 10 year consecutive tax holiday under the Income Tax Act 1961, no goods and service tax (GST) on services received under the Central Goods and Services Act 2017, exemption from customs duty under the Customs Act 1962 for all goods imported for authorized operations, and exemption from stamp duty and registration charges under the Gujarat Stamp Act 1958.

While Indian lessors such as JetSetGo and Vman Aero have begun small-scale leasing operations from the SEZ at GIFT City, foreign lessors have yet to substantially deviate from Ireland and give the Indian setup a chance. Recently, a foreign lessor entered into an aircraft lease agreement with Air India, which involved a head–lease–sublease structure; this structure contemplated a head lease between the foreign lessor and Air India and a sub-lease between Air India and its SPV (AI Fleet Services Limited) at GIFT City. an SPV at GIFT City in preparation for similarly structured transactions. However, no foreign lessor has yet set up an SPV at GIFT City. Given that it is primarily foreign lessors that own and lease the larger aircraft that market-dominant commercial air carriers such as Air India, Indigo and SpiceJet operate, it is fair to say that the SEZ at GIFT City is yet to make its mark on the Indian commercial aviation sector.

Foreign lessors remain apprehensive of doing business in India on account of several factors, such as the nascency of the SEZ at GIFT City, scarcity of banks that are willing to finance transactions through the SEZ at GIFT City, and most recently, the ongoing corporate insolvency resolution process of GoFirst. GoFirst, India's fourth largest airline by market share, had been struggling *inter alia* due to malfunctioning engines supplied by American aerospace manufacturer Pratt & Whitney, which resulted in the forced grounding of the majority of its fleet. The airline recently filed an application for voluntary insolvency before the National Company Law Tribunal, New Delhi, setting off a chain reaction that has left aircraft lessors unable to repossess their own aircraft. This has left foreign aircraft lessors with an extremely sceptical outlook towards doing business in India.

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India now finds itself at a crucial juncture on its path to becoming a formidable player in the global aviation industry. It is imperative for the Government of India to showcase a robust and uncomplicated business environment by addressing the concerns of foreign aircraft lessors so as to allow foreign direct investment via the SEZ at GIFT City to flow and the Indian commercial aviation sector to burgeon.

Notes & References:

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THE INDIA-UNITED STATES BASA IS BROKEN: CAN IT BE FIXED?

*P. Paul Fitzgerald**

Abstract

There exist disparities in the level of air services between the United States-India and United States-Japan routes. This is caused in large part by the predominance of Middle Eastern carriers, particularly Qatar Airways, in the United States-India aviation market. Despite India's larger population and significant potential for tourism to the United States, it offers markedly fewer non-stop flights to the United States compared to Japan. The Bilateral Air Service Agreements and the concept of privity of contract dictate the designated airlines' domination of their respective routes. The author argues that Qatar Airways leverages aggressive 6th Freedom operations to undermine the viability of direct flights between the United States and India. To address this imbalance, two strategic remedies are to be considered: India's withdrawal from the International Air Services Transit Agreement, enhancing its negotiating leverage, and renegotiation or cancellation of the BASA with Qatar. By adopting these measures, India could potentially recalibrate the competitive landscape, fostering greater direct air service while ensuring that American and Indian airlines capture a substantial share of international traffic between the two countries. This strategic manoeuvring aligns with broader geopolitical interests, reinforcing bilateral ties between India and the United States.

Keywords: Bermuda Agreement - Bermuda II - Open Skies - Privity of Contract - Transit Agreement

Introduction

Around the world, most international airline passengers fly with an airline based in the country of the origin or destination of their flight. Indeed, this is pretty much the practice everywhere, except on routes between the United States and India. More often

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than not, passengers travelling between the United States and India fly with airlines based in Qatar and the United Arab Emirates[1] who offer almost unbeatable one-stop service between 12 cities in India and 12 cities in the United States.

From a short-term consumer view, the services of the Emirati and Qatari airlines are attractive; you fly from your hometown in India to a fabulous airport in the Middle East with exciting Duty-Free Shopping, and you need no visa to transfer to the flight to your destination in the United States. From a long-term view, one might ask whether a Delhi-Doha-Houston service impedes the launch by Indian or American carriers of non-stop flights between Delhi and America's fourth-largest city. This is not a theoretical question; there are non-stop flights from Houston to Sydney and Tokyo but not to Delhi.

This article will explore the Gap between United States-Japan and United States-India air services as an example and consider ways to fix this gap.

BASA Concepts

A Bilateral Air Service Agreement (BASA) is a treaty that governs the commercial aviation relationship between its two signatory States. Through the BASA, the two signatory States negotiate the terms and conditions of the routes that their airlines will fly along, including the frequency of flights, aircraft size, cities to be served and other issues such as repatriation of profits, the ability to contract independent aircraft handlers, and security and marketing concerns.

A) Privity of Contract

An essential element of a BASA is privity of contract in that the market created by the BASA is to be the exclusive purview of the airlines designated by the BASA's signatory States. For example, within two years of the signing of the Chicago Convention, the United States and the United Kingdom had negotiated the 1946 Bermuda Agreement, which had, as its raison d'être, the regulation of traffic between those two States. Yet, the importance of the even distribution of traffic between the airlines designated by the two States cannot be exaggerated. When the United Kingdom learned that United States airlines were earning three times as much as British airlines from the routes between

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the United Kingdom and the United States, the United Kingdom renounced the Bermuda Agreement.[2]

The negotiations of Bermuda II were focused on two things: the United Kingdom - United States commercial aviation market needed to be divided evenly between the airlines designated by the United Kingdom or the United States, and the dominant carriers operating on routes between the two States should be American and British. This renegotiation became possible due to the operation of the privity of contracts.

The principle that the airlines designated by the signatory States to a BASA should be the dominant carrier on routes between the two BASA partners is central to the success of the BASA. Moreover, if they are not the dominant carriers, as seen in the United Kingdom - United States example above, the airlines will complain and may cause the BASA to be renegotiated or simply renounced. Indeed, if this principle is not observed, the BASA may not be necessary.

B) Open Skies

An Open Skies BASA is just like any other BASA except that the basic terms and conditions are set by market principles rather than by government officials. Thus, in the 2007 United States– European Union ASA, the airlines are the ones deciding what cities they will serve, how often, with what size of plane and via which routing.

The market discipline ensures proper decision making. No European or American airline would offer non-stop wide-body service between Bucharest and Omaha, simply because there is no market for non-stop flights between these two cities.[3] Airlines will fly the obvious trunk routes, such as between New York and London, but others will use the power of their hubs to operate more marginal routes.

At the current time, none of the airlines based in North America or Europe is government-backed and so market principles prevail in all of these BASAs, competition is fair and these BASAs are working well.

United States-Japan And United States-India Basa: Comparing Air Services

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Both India and Japan have Open Skies agreements with the United States. In December 2023, six airlines from Japan or the United States offered 287 weekly non-stop flights on 24 routes between Japan and the United States.[4] In the same month, three airlines from India or the United States offered 58 weekly non-stop flights on nine routes between India and the United States.[5]

If one considers that India has roughly ten times Japan's population and that both Japan and India are amongst the top six sources of foreign tourist to the United States, one might expect at least equal airline services from both India and Japan to the United States.

Assuming that Japan- United States and India- United States markets are roughly comparable, there is a gap of over 200 flights a week between the former and the latter. Of note, Qatar Airways offers over 84 flights a week between Doha and 12 cities in the United States and each of those connect in both directions with flights between Doha and 12 cities in India.

Understanding Doha as a Transit Point

In order to understand Qatar Airways' power as an interloper in the United States-India BASA, it is helpful to be aware of the air services that would normally be expected of similarly populated countries and Qatar Airways' view of its Doha hub.

What kind of air service would Doha normally have?

Even if you include the various expatriate workers, Qatar's population is just 2.97 million, comparable to that of Jamaica. Thus, if Kingston, Jamaica does not warrant a daily flight to London, how can Doha merit non-stop flights to 12 cities in the United States? Moreover, if Doha is such a popular destination for Americans, why is it that no airline, based in the America, and which is not allied in some form with Qatar Airways, serves Doha?

Doha is not a destination; it is a transit point according to Qatar Airways' CEO

Qatar Airways' explicit focus on aggressive 6th Freedom practice and being an interloper in various BASA was unwittingly revealed in 2010 by the airline's then-Chief Executive

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Office, Akbar Al Baker, when he launched the airline's non-stop route to Sao Paulo. He stated;

> With a large Lebanese and Japanese community living in Brazil, Argentina and neighbouring South American countries, the route is a perfect match for our business model, which carries passengers from East to West and vice versa via our Doha hub.

Qatar Airways' use of aggressive 6th Freedom practices and its status as a major interloper in various BASAs has produced dramatic negative consequences in virtually every market that Qatar Airways serves. In Europe, the United States and Asia, the dominant carriers based in the State partners of the applicable BASA have complained that non-stop routes between the BASA partners have been made less commercially viable due to the aggressive 6th Freedom operations of interloper carriers such as Qatar Airways.[6]

Remedies

Sadly, there are very few practical remedies to deal with the interloper problem. Given that the interlopers are based in States that are not Parties to the United States-India BASA, there is almost nothing that can be done. There are, however, two options that are very serious and may have significant implications. They are for India to withdraw from the International Air Services Transit Agreement (Transit Agreement) and for India to consult with Qatar or cancel its BASA with Qatar. For the purpose of this analysis, Qatar has been chosen as it has a tiny population and little tourism potential and Qatar Airways is therefore even more dependent on aggressive 6th Freedom operations than Emirates or Etihad.[7] These same factors give Qatar Airways enhanced status as an interloper in dozens of BASAs.

A) Withdraw from the Transit Agreement

India is a Party to the Transit Agreement by which it grants airlines of other counties to overfly its territory and make stops for non-traffic purposes. By withdrawing from the Transit Agreement, India would be firing a diplomatic shot across the bow, without immediately affecting any traffic rights of any airline. It must be noted that withdrawing

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from the Transit Agreement requires giving a year's notice to the international community under Article III.

Once a State has withdrawn from the Transit Agreement, in order to overfly that State or to make a landing there for non-traffic purposes, another State must have a BASA with that State, Canada withdrew from the Transit Agreement in 1988 and recently used the fact that it is no longer a party to the Transit Agreement to force the United Arab Emirates to drop its feud with Canada over Canada's refusal to grant them more liberal traffic rights.

The United Arab Emirates finally realised that as a non-party to the Transit Agreement, if Canada were to withdraw from the Canada- United Arab Emirates BASA, Canada would be in a position to deny overflight of its territory to flights of Emirates and Etihad to most cities in the United States.

India's territory is sufficiently expansive that even the threat of withdrawing from the Transit Agreement would get significant attention. This reality would strengthen India's bargaining position when negotiating BASA as a denial of overflight could result in the cancellation of many flights by carriers based in States who had not been able to negotiate a BASA acceptable to India.

B) Re-negotiate or cancel its BASA with Qatar

If India withdraws from the Transit Agreement, it will be in a much stronger position to negotiate with Qatar. Other than the back-and-forth travel of heavily exploited Indian guest workers in Qatar, there is very little bilateral tourism traffic between Qatar and India. For travel-minded Indians, Qatar has relatively few attractions compared to Dubai, Europe, and other parts of India. As an attraction for Qatari tourists, the only downside is that the number of Qataris with disposable income to travel as tourists to India is roughly a million.[8]

If India did not have a BASA with Qatar, travel between India and Qatar could be routed through Dubai or Bahrain; thus, India does not need a BASA with Qatar! It is Qatar that wants the BASA! As explained above, without access to India, Qatar Airways

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flights to the United States are no longer viable. India can dramatically affect the fortunes of Qatar Airways.

Secure in this knowledge then, India's BASA with Qatar must be of net benefit to India. By pulling out of the Transit Agreement, India would be able to negotiate forcefully with Qatar and get an agreement that could limit Qatar Airways' 6th Freedom operations and its interloper practices. This is because if an India-Qatar BASA could not be negotiated on terms completely satisfactory to India, India could tear up the BASA and subsequently be able to force Qatar Airways to cancel or dramatically re-route flights between Doha and Thailand, the Philippines, Malaysia and Singapore, and possible other destinations depending on prevailing wind patterns.

Any actions by the Government of India that limited the interloper actions of Qatar Airways would be boost to the India-United States BASA and increase the number of nonstop flights between two of the world's most important democracies.

Conclusion

Under the prevailing circumstances, it is clear that India-United States relations are going to improve very significantly, very soon. Their shared interests, their desire to forge closer ties, and the need for better collaboration will spur the need for increased travel between the two States. The question for the Indian government is what measures it will adopt to ensure that the lion's share of traffic between India and the United States is carried by American and Indian airlines on non-stop flights between the two States.

India's greatest power is in her people, but the geographic power granted by the expanse of her territory cannot be underestimated. It can be artfully used, as Canada has learned, to update a flawed BASA in the interests of the stronger, more important State.

Notes & References:

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[1] These are Government-Backed Mega Carriers based in the UAE and Qatar. All of them are focused on bringing Indians to Europe and North America. *See* Peter Paul Fitzgerald, *A Level Playing Field for "Open Skies": the Need for Consistent Aviation Regulation*, (The Hague: Eleven International Publishing, 2016) pp. 2, 105-109 & 286.

[2] 'Britain to end Bermuda Agreement', *Flight International,* 3 July 1976, p. 4.

[3] This routing was chosen to show how unlikely this route is; Bucharest has never seen a trans-Atlantic flight and Omaha has never seen a regularly scheduled flight from another country!

[4] This list is compiled from DATA in Airlines schedules, such as the Narita Airport International Flight Schedule (1-31 October 2023), and the schedules for American Airlines, Cargo Widebody Flight Schedule 1-30 September 2023, Delta Cargo, International Flight Schedule November 2023 and for United Cargo Widebody Schedule October 2023.

[5] This list is compiled from DATA in Airlines schedules, such as American Airlines, Cargo Widebody Flight Schedule 1-30 September 2023, and United Cargo Widebody Schedule October 2023. The eight routes are Chicago-Delhi, Newark-Mumbai, Washington-Delhi, New York to each of Delhi and Mumbai and from San Francisco to each of Bengaluru, Delhi and Mumbai.

[6] *Supra* note 1.

[7] *Ibid.*

[8] This includes the 332.000 Qatari citizens, who are roughly ten percent of Qatar's population. The remaining 90 percent are expatriate workers.

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BEYOND CAPACITY-BUILDING: "DOWNSTREAMING" SPACE TECHNOLOGIES THROUGH NEW SPACE COLLABORATIONS

*Jessica Los Banos**

Abstract

Given the fact that not all nations possess the capability for independent space activities, there exists a need for international cooperation for equitable access to space technologies. Developing countries, rather than competing with established space-faring nations, should capitalise on collaborative opportunities provided by open-access space technologies to foster socio-economic development. Capacity-building, defined as the enhancement of skills and resources necessary for adaptation and growth, is critical for achieving sustainable development goals. The 1967 Outer Space Treaty mandates cooperation and assistance to less-developed nations, framing capacity-building as a legal obligation for space-capable states. Initiatives such as UNOOSA's Access to Space Initiative and various UN General Assembly resolutions advocate for democratizing space access, thereby facilitating capacity-building and institutional strengthening. However, developing countries face continuing challenges in strategically deploying these technologies to realise long-term benefits. This paper, therefore, argues for a paradigm shift towards a collaborative capacity-building model that transcends development assistance, emphasising sustainable implementation and integration of space technologies across various sectors to drive innovation and growth.

Keywords: Access to Space Initiative - Democratizing access - New Space - Province of all mankind - Sustainable development

Introduction

Recognising the pragmatic reality that not all States can be space-faring nations is the first step to ensuring that international cooperation delivers on its promise of access to space for all. Rather than aiming to compete in the provision of launch services, the servicing of commercial nanosatellite constellations, or the emerging cislunar space segment which are dominated by entrenched players like the United States and China, developing countries with little or no capability to participate in space activities must instead leverage collaborative opportunities from open-access

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space technologies and applications as a sensible strategy for socio-economic development. Presence in outer space is not *per se* the enabler of growth; instead, access to space-based solutions is key to ensuring sustainable development. In its 2021 Exploring Space Technologies for Sustainable Development report, the United Nations Conference on Trade and Development (UNCTAD) has noted that while use of space technologies, such as satellite Earth observation, communications, navigation, and positioning to address food security issues, deliver education services, build smarter cities, cope with disasters, and reduce poverty have become ubiquitous, bottlenecks persist that prevent developing countries from exploiting these technologies, including a basic lack of awareness concerning benefits, and the technology and skills gap to develop, use and adapt them. To address these constraints, it endorsed international efforts at promoting access through collaborations for capacity-building.

Understanding Capacity-Building

Capacity-building is defined broadly as "the process of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities need to survive, adapt, and thrive in a fast-changing world". There is common consensus that capacity-building is critical in supporting developing countries to achieve their sustainable development goals (SDGs). However, there is a need to revisit and reframe the conventional narrative centered around perceived and apparent lack of know-how and resources in this age of deep space missions and artificial intelligence. Emerging technologies including satellite communications and its derivative applications such as web search engines, AI and Internet of Things (IoT) are said to be "the future of everything" and are increasingly made available to the public through open source arrangements. It is therefore timely and essential to challenge the popular assumption that development assistance is the primary means to enable developing countries to steepen their learning curves and to cut the time to apply technology-driven solutions, particularly considering that information and data sets have become increasingly available for learning, benchmarking, baselining, strategic planning and implementation purposes."Development is a comprehensive process involving economic as well as social and environmental changes" and developing countries must adapt and change to keep pace with revolutionary and emerging technological advancements. Development assistance can only work in a good policy environment, where there are improvements in

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economic institutions and policies, complemented by private investment, with a "focus on ideas and not money" that produce tangible and measurable results. Accordingly, capacity-building should be "repackaged" to enable both public and private sectors to undertake constant innovation to harness open access space and emerging technologies and ensure their deployment in much needed reforms that are sustained beyond one-time pilot initiatives.

The Outer Space Treaty's "Benefit and Interest" Mandate

Capacity-building is intrinsically entrenched in the 1967 Outer Space Treaty, which transformed the principles on the peaceful and responsible use of outer space into legal obligations. Article I lays down the need for respecting the benefit and interest principle by stating that "the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind." The twin principles of "benefit and interests" and "province of all mankind" indicate the importance of collaboration in scientific research and space technology development. This is further supplemented by the emphasis on international cooperation under Articles I, III, IX, X, XI and XII of the Outer Space Treaty. Hence, the Outer Space Treaty reflects the duty to provide capacity-building assistance to less-developed countries to explore and use outer space, and lays down the foundation for international partnerships in space activities. As space technologies developed by first-movers facilitate provision of ideas, data and solutions, developing countries, with the cooperation from developed states, become better equipped to craft for themselves effective strategies and programs tailored to their technology absorption capacities and sustainable development challenges.

Democratizing Access to Outer Space for Developing-Country Actors and Activities

While the scope, content and the extent of the "benefit and interest" and "province" principles, and the intensity and inclusivity of capacity-building assistance are open to debate, space-capable nations are delivering on their obligations by democratizing access to outer space. For example, the availability of Global Navigation Satellite System (GNSS) and other space-based services offering free mass-market access for position, navigation, and timing is "creating unprecedented opportunity, bringing

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benefits in the areas of emergency management, marine and land monitoring, or fleet control to name a few". The democratization of access to outer space is a progressive concept that represents a departure from the historical dominance of space-faring nations that jealously guard intellectual property rights to protect national security, thus opening avenues for New Space actors from developing economies to actively use space technologies for sustainable development. New Space involves a paradigm shift towards a more accessible and inclusive space environment, where true to Outer Space Treaty's vision for humanity, the benefits and opportunities associated with outer space activities may be seized by cost-sharing arrangements, public-private partnerships, and collaborative ventures, that overcome resource and know-how constraints beyond the development assistance model of capacity-building.

Two important initiatives promote New Space through cooperative multilateral arrangements. The United Nations Office for Outer Space Affairs (UNOOSA)'s 2018 Access to Space Initiative is a forward-thinking program that offers access space research facilities, infrastructure and information, serving as a platform for developing countries to collaborate with space-faring nations and partner institutions for capacity-building. In parallel, its 2019 Space Law for New Space Actors Project complements the access initiative by providing a framework for space law to be tailored to the circumstances of the new space entrants. This project harmonizes state practice and spreads the benefits of space exploration while upholding the principles of international cooperation and responsible conduct in space. Buy-in is also assured as capacity-building assistance is by request. According to UNOOSA, this "contributes to raising global adherence to - and awareness of - the international and legal instruments applicable to outer space activities, for the benefit of established and emerging space-faring nations alike". Non-profit organizations and academic institutions, such as the Secure World Foundation which released its Handbook for New Actors in Space and the USA-ISU's (International Space University) Access to Space in the Southern Hemisphere, confirm the need for a new capacity-building model within the New Space framework.

Similarly, expansion of access to space technologies has remained a key priority on the agenda of the United Nations General Assembly (UNGA) since the 1950s. A review of resolutions on the international cooperation in the peaceful uses of outer space, often adopted without a vote by the UNGA, affirm member states' conviction

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that use of space science and technology and their applications contribute to achieving the economic, social and cultural goals of developing economies. Its more recent resolutions in particular call for greater access to and use of space-based services and geo-spatial information and facilitating capacity-building and institutional strengthening for disaster management. In its 15 December 2022 resolution, the UNGA noted that progress has been achieved in fostering international cooperation and reiterated the importance of continuing to build capacity for developing countries to access and use space technologies particularly under the UN Programme on Space Applications.

Sustainability of Strategic Technology Deployment

Moving beyond access to space technologies and capacity building, developing countries must now grapple with the arduous undertaking of implementing their sustainable development agendas by strategically deploying these technologies for long-term benefits. Addressing the two concerns raised by the UNCTAD on the lack of awareness concerning benefits of space technologies and the skills to develop, use and adapt them through collaboration represents just the initial step flowing from collaborative capacity-building. In regard to bringing awareness of benefits of space technologies to developing countries, capacity-building activities, such as the forthcoming UN/Philippines Workshop on the Applications of Global Navigation Satellite Systems, must move beyond information-sharing and knowledge-building and emphasize the more difficult operational task of bringing solutions downstream through grassroots and ground deployment. Action plans entailing the identification of an initial project such as the use of drones and GNSS data for precision farming and entering into a preliminary agreement of regional cooperation between countries must be designed under the New Space paradigm. Likewise, addressing the skills gap to facilitate transfer of technology, knowledge, and expertise will require adjustments and improvements in the country's education and training systems. Educating a cadre of scientists, engineers, and technicians is essential for the continuous deployment of space technologies and applications capable of undertaking research, development, and innovation in space-related activities. In the Philippines, a long-overdue pioneering aerospace degree at the Ateneo de Davao University is now on offer but other universities are yet to launch their own programs.

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Moreover, "downstreaming" space technologies through collaboration must focus on the use and implementation of space technologies and should not be co-opted by issues of time, resource and knowledge necessary to establish a "space program or agency". Instead, developing countries must design implementation mechanisms consistent with the New Space paradigm by establishing mediating bodies such as the United Kingdom's Satellite Applications Catapult and the European Space Agency's Downstream Gateway, which operate as 'one-stop shop' service for all downstream opportunities involving activities based on space technology, or using a space-derived system in a space or non-space environment, that may result in an application, product or service to the benefit of the economy or society, effectively creating links between new and emerging business sectors and the capabilities being developed by States. This strategy hurdles the commonly held belief that a space policy or agency is needed before space technologies can be used. More importantly, it facilitates the integration of the space sector with mainstream industries, particularly health, energy, resource management, information and communication, and transportation, which are critical for implementing their SDGs.

Conclusion

Accessible space technologies and the associated capacity-building resources are readily available to developing countries. They must however be implemented and deployed beyond assistance arrangements. To facilitate their enduring and sustained application for practical purposes and effective solutions across downstream industries for the benefit of stakeholders, developing countries must now embrace the new paradigm of collaborative capacity-building where commercialization of space technologies and applications can become catalysts for innovation and problem-solving tailored to their specific sustainable development needs.

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AIRPORT DEVELOPMENT IN INDONESIA: QUO VADIS?

Ridha Aditya Nugraha[*]

Abstract

Indonesia relies heavily on air transport in ensuring inter-island connectivity, especially in the areas of the execution of government functions, facilitation of trade, and even provision of health care services. With a population size of about 274 million, air transport is of prime importance, with transportation in 111 million passengers and 937,315 tons of cargo in the year 2023. The sector is under the management of InJourney, which manages 35 airports through the state-owned companies, Angkasa Pura I and II. However, challenges persist despite the existence of legal provisions on the formation of public-private partnerships (PPP) and the recent revision of the minimum requirements of 5 aeroplane fleets for airlines planning to open and operate in Indonesia to encourage foreign direct investment. Ticket pricing has been regulated, and combined with the factors of the economy, which resulted in low profitability for both the airline industry and the airport operators as a whole. New airport projects, like as Komodo Airport and Dhoho Airport, illustrate the use of PPP models in the improvement of facilities and infrastructure. With the further development of national airspace management legislation in Indonesia, great stress is placed on the facilitation of Public Private Partnerships, providing proper investor guarantees and development of comprehensive strategic airport location planning, which are important in terms of connecting the country better and enhancing its economic development. Hence, the paper argues for a holistic approach to deal with all problems faced in the development and management of airports in Indonesia.

Keywords: Airport - Investment - Liberalisation - Open Skies - Public-Private Partnership (PPP)

State of Play

As an archipelagic country, Indonesia heavily relies on air transportation for inter-island transportation. In many ways, land and water transportation cannot replace their air counterpart. Government affairs, trade, and even healthcare depend on seamless air connectivity. The reliability of air transportation not only depends on

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airlines, but also on the availability of airports among Indonesia's five biggest islands (Sumatra, Java – as the most developed island, Borneo, Celebes, and Papua) and many lesser islands.

Indonesia, with a total population of around 274 million – half of whom live on Java Island – is a lucrative market for air transportation. About 111 million passengers and 937,315 tons of cargo were transported in 2023. Furthermore, Indonesia is a Member State of the Association of Southeast Asian Nations (ASEAN), a region of 650 million people, which is welcoming the ASEAN Economic Blueprint 2025 that encourages regional economic growth through air connectivity.

Airports, therefore, serve as critical hubs enabling access to island communities and fostering economic growth through enhanced mobility. For decades, two big concessionaires have operated in Indonesia, namely Angkasa Pura I and Angkasa Pura II. Both are state-owned companies and receive state funding. As of 2024, both are managed by InJourney, a newly formed state-owned enterprise holding which operates a total of 35 airports across the archipelago. InJourney was established for the purpose of financial consolidation and business coordination; thus, both Angkasa Pura I and Angkasa Pura II still operate independently.

The legal framework on airports relies mainly on the Indonesian Aviation Law of 2009 and the Ministry of Transportation regulations, establishing legal certainty for investments in airports in Indonesia. The Indonesian Positive Investment List[1] of 2021 allows a maximum 49% foreign holding in the air transport sector. Although the list does not specifically mention airports, the single majority concept can be interpreted to apply to the entire air transportation industry.

After the pandemic, the Indonesian Government enacted the Omnibus Law, which amended some provisions of the 2009 Aviation Law. However, besides encouraging public-private partnership (PPP), the revisions to the airport provisions are not significant. Presidential Regulation No. 38/2015 already encouraged collaboration between government and private actors in the infrastructure sector, which includes the construction and operation of airports. Indeed, PPP schemes between state-owned enterprises and the private sector could reduce the burden of the state in financing the operation of airports.

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Currently, there are private companies investing in airports under PPP schemes such as the GMR Airport Consortium from India which set up a joint venture with Angkasa Pura II in operating Kualanamu International Airport (North Sumatera Province, Sumatera Island), and Changi International Airports from Singapore under Cardig Aero Service Consortium which operates the Komodo Airport (East Nusa Tenggara Province, Flores Island).

The Indonesian Airline Policy Impacts on Airport Operators

There are two main policies pertaining to airlines which have indirect and direct effects on the development of airport operator businesses in Indonesia. First, the enactment of Omnibus Law in 2020 amended the minimum number of aircraft required to establish an airline. Prior to the Omnibus Law, a scheduled airline must operate a minimum of ten aircraft: owning no less than five and possessing five more (for example through leasing). Currently, three aircraft are sufficient. The reduction in the size of the fleet is aimed at ensuring that Indonesia will be able to compete with other ASEAN Member States in attracting foreign direct investment (FDI) especially post-pandemic.

Second, Indonesia is one of the few countries that still implements policies pertaining to floor and ceiling ticket price for domestic routes. The Minister of Transportation evaluates tariff rates and ensures that the lowest authorized price (floor price) shall be no lower than 35% of the highest authorized price (ceiling price).[2] In contrast, international flights to and from Indonesia prefer to adhere to their "open skies" commitments in order to promote pricing transparency and fair competition against foreign airlines.

Four years after the enactment of Omnibus Law, there are no signs of new FDI in the Indonesian airline industry. Despite the single majority concept, Indonesia continues to struggle in attracting foreign scheduled flight business. To date, AirAsia Indonesia, a Malaysia-based company, remains the only airline established prior to the enactment of the Omnibus Law.

A few international conflicts after the pandemic have also led to skyrocketing oil prices and a slower recovery in the aviation sector. Consequently, a problem arises for Indonesia as the Ministry of Transportation regulates the maximum tariff for domestic routes, alongside the ceiling and floor prices. With airlines capped by this

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limit, the depreciation of Indonesian Rupiah against the United States Dollar has resulted in thin margins for both airlines and airport operators. The closure of a number of non-trunk routes has led to less traffic to many (smaller) Indonesian airports.

The foregoing highlights the dependency of airport development in Indonesia on airline policies pertaining to the domestic market. This is noteworthy as domestic routes served as primary revenue stream for Indonesian airlines before the pandemic, with a total of 96.8 million passengers in 2017, while international flights only accounted one-third of the domestic market. Thus, growth of airline industry directly impacts airport income and development.

Challenges for Indonesian Airports

Airport presence is necessary for establishing air connectivity. According to information published on the Indonesian Directorate General of Civil Aviation - Ministry of Transportation website, there are around 340 airports and airfields in Indonesia. As of 2023, 32 airports are designated as international airports while the rest are classified between class I, class II, class III, or work units. Facilities and capacity are the differences among them. Most airports in Indonesia are built or renovated fully funded by Government.

Not all airports can operate effectively, making it even more crucial to attract new market openings. New routes should grow and sustain, not the contrary. J.B. Soedirman Airport in Purbalingga, Ngloram Airport in Blora, and Kertajati Airport in Majalengka – all of them in Java Island -- are examples of state-funded airports lacking passengers. The last is even known for its huge amount of investment. However, these airports have not yet reached their ideal capacity.

Banyuwangi Airport, situated as the most eastern airport in Java, is another story. The terminal won the Aga Khan Award for Architecture in 2022 and is touted as an Indonesian green airport. However, traffic to this airport does not share its architectural achievement. Dependence on subsidies poses a challenge, particularly in light of the unsuccessful Jakarta-Kuala Lumpur international route. Although immigration facilities were provided to Indonesian migrant workers and people living in the far east of Java Island, the airport's operation is far from optimal.

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This raises an issue from a planning perspective, including whether academic studies had been conducted, such as air transport economics and operations management, prior to location selection. There are other areas in needs of such limited funding to build or upgrade airports -- especially those lacking alternative modes of transportation outside Java Island. Moreover, given the focus on the new Ibu Kota Nusantara, funding for airport infrastructure is expected to remain constrained in the foreseeable future.

PPP schemes are therefore an attractive alternative to raise funds for Indonesia's new airports. Komodo Airport in Labuan Bajo, Singkawang Airport in Borneo, and Dhoho Airport in Kediri are examples of airport constructions facilitated by public and private partnerships. Komodo Airport represents a significant milestone as the first Indonesian airport constructed through such an arrangement. It was developed through a joint venture between Cardig Aero Services and Changi Airports International, with a total investment of IDR 1.2 trillion. Under the 25-year concession agreement, its operator is entitled to levy fees on both aeronautical and non-aeronautical services. The Government has also pledged to assist with land acquisition. With a runway of 2,250 meters, Komodo Airport is suitable for narrow body aircraft such as the Airbus A320 and Boeing 737 series. Previously it was limited to smaller aircraft such as ATR.

In regard to the Singkawang Airport, the Indonesian Ministry of Investment (BKPM) has disclosed that it will offer the private sector an investment opportunity totalling IDR 4.3 trillion with a 32-year concession. Currently at pre-qualification stage, the bid process is scheduled for December 2023 to April 2024. There is already some delay as the Indonesian Ministry of National Development Planning (Bappenas) PPP Book (2022) had previously set the pre-qualification process in Q4 2022 and signing in late 2023. The new airport is expected to welcome narrow body aircraft like in Komodo Airport and to earn the projected revenue of IDR 15.9 trillion (aeronautical) and IDR 2.1 trillion (non-aeronautical). The Government will also provide guarantee to assist land acquisition.

Financing for Dhoho International Airport in Kediri also attracted public attention. It is the first airport in Indonesia constructed by a private sector led by Surya Dhoho Investama, a subsidiary of Gudang Garam Tbk – one of the biggest Indonesian tobacco companies. Its partnership with Angkasa Pura I is scheduled for 50 years.

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The total investment amounted to IDR 10.8 trillion. Capable to welcome wide-body aircraft, passenger capacity is expected to reach 1.5 million passengers annually, and to 4.5 million (phase II) and 10 million (phase III). The maiden flight was conducted by Citilink Indonesia on 6 April 2024 en route Jakarta Soekarno-Hatta International Airport (CGK) to Dhoho International Airport (DHX).

Finally, national defense and security should also be considered when deciding airport location. The Indonesian Air Force airbase in Madiun has a fighter squadron which is close to Dhoho International Airport. Operational issues from civil-military perspective should also be carefully evaluated, including considerations of legal certainty in the publication of aeronautical information on prohibited areas. Security for civil flights should not be compromised while guaranteeing seamless connectivity from a business perspective.

Concluding Remarks

Indonesia is currently drafting its national airspace management law, which hopefully could bring a timely solution on the issues of airport development and services expansion in the country. The hearings in the House are scheduled for mid-2024, with the aim of enacting a draft law before the end of the year. The new law should seriously consider promoting the PPP scheme and provide incentives to attract domestic and foreign investors. It should also ensure that aviation law academia are consulted and research on transport economics and management are institutionalized as an integral aspect of airport development policy. The Indonesian Government's willingness to accommodate their contribution particularly in addressing airport location issues and challenges will lead to better policy formulation based on science and not merely as political accommodation. The forthcoming airport development framework should benefit not only airlines but also positively impact the expansion of Indonesian airports in areas where they are most needed.

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[1] Indonesia, Presidential Regulation No. 49/2021 on Investment Sector. See Third Attachment, No. 31 (KBLI 51109).

[2] Indonesia, Ministry of Transportation Regulation No. PM 20/2019.

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CHALLENGES OF SPACE SECURITY GOVERNANCE

Dr. Rajeswari Pillai Rajagopalan[*]

Abstract

The outer space has become a highly contested domain, with increasing geopolitical tensions and competition among major space powers. Space security has gained prominence as more countries shift their space programs from peaceful applications to military and defence-oriented agendas. The 2007 Chinese anti-satellite (ASAT) test broke a long-standing norm, prompting other nations, including India, to develop similar capabilities, escalating the militarisation of space. Alongside ASAT, cyber and electronic warfare tactics pose new threats. Global governance has struggled to keep pace, with fragmented efforts to establish new space rules, hindered by great power rivalries and differing approaches to space security. Existing treaties, like the Outer Space Treaty, are outdated, focusing on nuclear weapons while failing to address contemporary non-nuclear threats. This article hypothesises that as more state and non-state actors enter the space arena, developing consensus on new governance frameworks remains challenging, with smaller technical agreements offering a potential way forward.

Keywords: ASAT test - Geopolitics - Nuclear weapons - Outer Space Treaty (OST) – WMD

Outer space has become one of the most contested global commons today. Outer space has always been affected by great power politics but the intensity of that competition has increased in the last two decades. This is particularly evident in space security developments and in the global governance arena. With the growing geopolitical flux, space security is gaining more salience. On the global governance front, lack of consensus among the major space powers has become the most serious impediment in developing an effective outer space regime.

Increasing Salience of Space Security

A particular salience of space security is that more and more countries are pursuing their space programmes with a security agenda as a key driver. Countries that had pursued a purely civilian space programme with an almost complete focus on

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peaceful applications of space are reviewing and re-directing their space programmes to assume a greater role for security purposes. Many countries in the Indo-Pacific region and beyond have gone on to establish dedicated military space institutions and/or are developing defence space strategies that are in tune with the growing space security threats. These are clear indicators of the securitization of space. There are of course many factors such as the US-China space competition, growth of counter-space capabilities and the growing profile of private sector that have pushed these changing space security dynamics. All of this is a result of the changing geopolitical churning that is underway in the Indo-Pacific, which has emphasized a great deal on hard power including in outer space. Securitization of political and sovereignty-related territorial issues has meant that states tend to accumulate military advantage in every domain. Given that space has become so integral to conventional military operations, gaining an edge in the military space domain including through acquisition of counter-space capabilities has become more or less the norm.

To give one instance, take the case of anti-satellite (ASAT) weapons. After conducting multiple ASAT tests in the 1980s, both the US and the USSR had put an end to ASAT tests, acknowledging their harmful impact for the long-term sustainability of space. However, China kick-started ASAT testing, breaking a moratorium that prevailed for more than two decades, in January 2007. This gave way to more countries undertaking ASAT tests and several more have begun investing in the technology. Following the Chinese ASAT test, the US conducted its own ASAT test (Operation Burnt Frost) in January 2008 and India demonstrated its capability in March 2019. These are merely demonstrative of the fact that space security dynamics are changing and giving way to a more competitive environment.

An inescapable fact is that China's test has had spin off effects with other countries conducting ASAT tests or are in pursuit of such weapons. India offers the best example in this regard. India was one of the most vocal critics of the US and the Soviet military space programmes and their ASAT tests in the 1980s and New Delhi had a steadfast civilian space programme but was compelled to rethink its space orientation following the Chinese ASAT test. The 2007 test set off a new debate within the country on how it should respond to the Chinese ASAT weapon and the implications of the China's new weapon. Similar debates have been taking place in

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other countries as well including Japan, which has already invested in interceptor technology.

While ASATs are particularly destructive and considered as inherently destabilizing, there are a range of other counter-space capabilities including cyber and electronic warfare in space that are becoming a more attractive option for states should they want to interfere with or destroy other states' satellites. Cyber and electronic warfare means have been used in many instances for more than a decade.

There are also other challenges such as emerging new actors as well as non-state players, space debris, crowded orbits triggering radio frequency interferences, issues of spectrum allocation, and problems of access to space, especially for new and emerging players. All of these make space crowded and congested, and access to space more difficult and dangerous. For many developing countries that have just begun to appreciate the use of space in changing the lives of people, getting access to space technology and expertise is still challenging, a reason why they emphasize technology sharing in the context of global governance.

Most of these problems are new. The difference comes from the fact that states have demonstrated greater inclination to develop and use offensive counter-space capabilities intended at creating temporary disruptions in other countries' satellite operations. This trend is far more visible today than what was witnessed during the Cold War. There have been growing instances wherein cyber and electronic warfare means have been used resulting in temporary disruptions. While no ASAT weapon has yet been used to target space assets, possibly because of immediate and serious consequences, lack of response to instances of cyber and electronic warfare is normalizing bad or irresponsible behaviour. Irrespective of the damage, whether it is temporary or permanent, there must be repercussions. Absence of repercussions could encourage perpetrators to carry on with such attacks. This highlights again the need for identifying clear lines or red lines, beyond which there must be consequences. The red lines must also be disseminated in the public so that the adversaries are also clear that there is a red line they should not cross. In the absence of such articulations, what is increasingly seen is that norms that have prevailed for long are being challenged and/or are broken. The norm to not test ASAT has been broken since January 2007 when China broke a decade-long norm. Similarly, growing instances of the use of other counter-space weapons creating temporary disruptions

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are also violation of existing norms to not interfere in each other's satellite operations. Unless these actions are curbed, the danger of normalizing such bad behaviour will be a bigger challenge to address at a later date.

Along with capability developments, countries are also responding in terms of new dedicated military space institutional mechanisms for better civil-military interface as well as to formulate longer term strategies and policy approaches. India went about establishing a Defence Space Agency (DSA) in October 2019 to ensure better coordination between the Department of Space, the Indian military and the Ministry of Defence. Countries such as Australia, Japan, and France have their own debates about how to further integrate space with their military. Meanwhile, other countries who already have such institutions include Russia (Russian Aerospace Defence Forces, 2011), China (People's Liberation Army Strategic Support Force, 2015), and the US (Space Force, 2019).

Global Governance in a Limbo

The growing space security developments point to the urgent need for new rules of the road. But global governance discussions in the last decade or so have been quite turbulent with some of the recent efforts such as the UN Group of Governmental Experts (GGEs) not even able to produce consensus reports at the end of their deliberations. This is reflective of the fractured nature of the global politics and the great power rivalries that have become antagonistic to the point of not even being able to agree on an outcome document. The inability of all the major space powers to come together to agree on important space security challenges and possible solutions have thwarted solutions.

Outer space is not bereft of any treaties and governing measures, but these came about in a different era when the threats were of a significantly different nature. The primary concerns during the 1960s and 1970s were about nuclear weapons unlike today where non-nuclear and conventional weapons have come to occupy the center-stage. Therefore, the existing legal measures, including the Outer Space Treaty (OST) of 1967, are proving to be ineffective in tacking contemporary threats. The OST remains the fundamental treaty measure in ensuring the sanctity of outer space, but it has an important lacuna – the treaty only prohibits the placement of weapons of mass destruction (WMD) and says nothing about non-WMD weapons. Also, there are a number of new activities being undertaken and new technologies being

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developed, which are not considered in the OST. Activities, including on-orbit satellite servicing that essentially extends the life of a satellites by remotely repairing or refuelling satellites or technologies such as those to remove space debris, are relatively new and we need new rules to frame the parameters to undertake such activities and moderate the use of these new technologies. While these are defensive and peaceful activities, given the heightened sense of competition and rivalry, such activities are watched with a lot of concern. Finally, there are a broader set of new actors in space including industry players whose roles and responsibilities need to be clear, which help or hinder the process of rule-making. Given the growing presence of industry players in space, there have been efforts to give them a voice at the global governance debates, but this has been challenging.

Whatever form and shape new rules take, the need to identify basic tenets of responsible behaviour cannot be ignored. Given the growth in the number and types of actors, we need new norms and rules that will define and identify clear limits of responsible behaviour in space. One can explore the possibilities of reviewing the existing rules and regulations, but given the fractured nature of global politics, the feasibility of developing a common understanding in how some of the existing measures can be revised will be a non-starter. But it is clear that given the significance of outer space in our daily lives, any disruption will have a far-reaching impact in terms of multiple sectors being affected but also different regions. There are additional complications like how an over-crowded outer space can cause radio-frequency disturbances but because of the heightened sense of competition and rivalry, even a natural event or a mechanical failure could be considered by some state as an intentional attack. This kind of a scenario highlights the urgent need for crisis communications and standard operating procedures to confirm if something was a natural event or an attack.

While there have been several efforts in recent years to formulate new rules and regulations governing outer space activities, none of these have reached any fruitful conclusion. These include the Russia-China sponsored draft Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects (PPWT), originally proposed in 2008 (with a revised text introduced in 2014); the EU-initiated International Code of Conduct for Outer Space Activities 2010, the 2013 UN Group of Governmental Experts (GGE) on Transparency and Confidence Building Measures (TCBMs), the 2018-19

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as well as 2023 UN GGE on further practical measures for the prevention of an arms race in outer space (PAROS), and the 2022-23 Open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours. It is not the lack of understanding of the threats and challenges among the major space powers that there is no progress but there are a couple of other factors that have come to affect today's state of limbo.

For one, there are philosophical differences in how different countries approach space security challenges and possible solutions. A group of mostly Western countries with the US in the lead believe that political measures including norms of responsible behaviour such as Transparency and Confidence Building Measures (TCBMs) are effective measures under current international political climate when trust and confidence among states are at an all-time low. Given the fractured natured of international politics, the US and a group of countries have felt that developing legal measures may not be a feasible way for the immediate future. A second group of countries led by China and Russia have in the meantime insisted on legal measures as the only effective means to address space security challenges. This assumes that legal measures are like magic bullets and once states sign onto treaties and agreements, all the space security challenges will be dealt with. This is far from the truth as history demonstrates, especially in the Asian context. Finding a compromise between these schools of thought has not been easy.

Two, rule-making exercise has been far more difficult in recent years because unlike in the 1960s and 1970s, when two or three powers worked out what is best and everyone else fell in line, today there are more than eight major space actors and they all want to have a say in how the new rules are written. Developing a consensus in a group of nearly 100 space players is an extraordinary task. Further, the changing balance of power dynamics is unlikely to settle down in the near future, which also means the inflexible stances that major powers have taken so far will continue to hold for a reasonable period of time, making governance debates extremely challenging. Instead, what might be required and feasible is to go for smaller technical agreements that would address various challenges individually than attempt to develop a large comprehensive treaty that might not take off in the near future.

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ROLE OF THE IATA IN AIRPORT GOVERNANCE AND SUSTAINABILITY PRACTICES IN INDIA: A CASE STUDY OF THE GUWAHATI AIRPORT

Kanchan Yadav[*]

Abstract

Climate change is no longer a distant threat but a visible crisis, especially with the sharp rise in global temperatures. Despite the Paris Agreement's goal to limit warming to 2°C above pre-industrial levels, emissions continue to rise, posing a major challenge. The civil aviation industry is a significant contributor to carbon emissions, and organisations like the International Air Transport Association are pushing for net-zero emissions by 2050 through sustainable innovations in airlines and airports. However, the real challenge lies in implementing these sustainability goals. The case of Guwahati's Lokpriya Gopinath Bordoloi Airport highlights the gap between claims of sustainability and actual efforts. While some basic eco-friendly measures are in place, the lack of comprehensive carbon footprint assessment and genuine planning undermines long-term sustainability. The paper emphasises practical and pragmatic solutions that can contribute towards real progress, rather than publicity.

Keywords: Airport Governance Toolkit - Airports Authority of India - Climate change - Paris Agreement - Zero emission

Background

The effects of climate change are no longer far-off consequences of human actions; rather, they are extremely visible in modern society. As per 2019 statistics, global warming had already reached a level of 1.1 degrees Celsius above the pre-industrial period. In 2023, the figure reached a whopping 2.45 degrees Celsius increase. The average temperature of the decade ending with 2019 was the highest ever recorded, with a severe reduction in polar ice levels and a rise in sea levels. Thirty percent of the world's population is now subject to deadly temperature conditions for more than twenty days every year.

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In the Paris Agreement 2015, the global community came to a legally binding commitment to ensure that the global temperature does not rise beyond 2 degrees Celsius above pre-industrial levels. To ensure that, pledges were made to decrease the individual nations' greenhouse gas emissions in a progressive manner till 2030, or till a goal of net zero emission is reached. However, because of non-compliance up till this point, the nations now have a rather high goal of almost 8% reduction in emissions every year to be on the 2°C road. If another five years pass at the current pace, the goal would reach to an almost impossible level of almost 16% reduction.

Broadly speaking, the two biggest culprits behind global warming and climate change are CO2 (primarily obtained from burning fossil fuels) and Methane (primarily used in the cooling industry). While Methane is deadlier in a small amount, its impacts dwarf compared to CO2, which is produced by almost every human activity. One of the primary sectors which contribute to carbon emission is civil aviation.

Emission reductions in the civil aviation industry need to come together from two different areas – airlines and aerodromes. On the one hand, the airline industry needs to reduce its carbon emissions through innovations in engine and fuel, on the other hand, airports need to equip themselves with the necessary infrastructure and technology that would reduce their own emissions and have positive impacts on the airlines' efforts as well. Taking that into account, the International Air Transport Association (IATA) has called for a target of net zero emissions for all member airlines and airports. However, considering the global lax attitude towards sustainability in the previous decades, the level of compliance with such objectives needs to be enquired into.

Sustainability in Civil Aviation – Efforts of IATA

IATA is a non-governmental global association, comprising of major airlines across the world. Founded in 1945, the IATA currently has 317 member airlines from more than 120 countries. The overall membership of IATA covers around 83% of all civil aviation worldwide. It describes the mission of the association as "working together to shape the future growth of a safe, secure and sustainable air transport industry that connects and enriches our world".

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In the recent years, the IATA has shown a strong move towards sustainability. The overarching objective regarding the same is to ensure that global civil aviation reaches net zero emission by 2050. While aspects such as the sustainable aviation fuel (SAF) and Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) are to be implemented in the context of airlines, the IATA has been greatly vocal about the need for airports to reach net zero emission as well. It has mentioned that sustainability should be at the core of airport planning, from the time of conception to improvement of existing infrastructure and technology. The goal, ultimately, is to build 'green airports', so that there can be the "greatest possible reduction in the air transport industry's overall carbon footprint in the most efficient way".

To facilitate the same, IATA's Airport Governance Toolkit provides dedicated steps to be taken towards airport sustainability. The Toolkit provides a description of five primary domains with respect to airport governance, with Community and Environment being one of them. This domain, in particular, focuses on sustainability and environmental issues with respect to noise, air quality, and water and waste management. Moreover, it emphasizes upon the need for the decision makers considering all aspects of sustainability in airport governance, while enacting relevant regulations and changes.

Other than the Airport Governance Toolkit, the IATA also periodically publishes an Airport Development Reference Manual. In its current version the Manual identifies primarily four components of sustainability that airport development should focus on. They are; the reduction of CO2 emissions, the reduction of NOx and other missions, reduction of noise, and sustainable land use, to ensure a balance of interests among the passengers, society, economy, and environment.

The first of such elements is the design of the airport. While the individual design of each airport would vary based on the passenger and aircraft movement requirements and capacities; the physical layout of the terminal, buildings, taxiways, and runways impact the overall sustainability of the airport. Another important aspect of sustainability, as highlighted in the Manual, is the reduction in emissions – which can be facilitated by modifying road and public transport access to the airport and discouraging the usage of private vehicles over public transport. Energy

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consumption and usage would also be an important element towards building a green airport, which would consist of using energy-efficient technology, energy conservation via automated temperature control, and implementation of temperature control methods.

Overall, the various documents published by the IATA highlight the crucial role that airports play in reducing overall carbon emissions and other unsustainable practices associated with civil aviation. Other than design and infrastructure related steps, this would also include initiatives such as green investments, appropriate resource management, and better collaboration among various stakeholders in airside operations.

The GAU Story: Compliance Status

While the IATA has been proactive in providing steps to make its goal of net zero emissions by 2050 a reality, all of it would be futile without such recommendations being implemented by the concerned national, state, and local governments. In the Indian context, it is true that there has been a considerable amount of efforts towards reducing emissions from airports and supporting other sustainable practices. However, the reality of the tier 1 international airports starkly varies from that of the airports in tier 2 cities. An exploration of the Lokpriya Gopinath Bordoloi Airport (GAU) in Guwahati would confirm the same.

The GAU airport was established in 1958, as one of the first airports in the north-east region of India. The Airport has a capacity of serving 20,000 passengers at once and 6 million annually, a figure that was almost reached in 2023, with 5.6 million passengers served during the year. The airport currently has one terminal, but considering the increased footfall, the construction of a second terminal is underway since 2018. The new terminal will be able to serve an additional 10 million passengers.

Since work on the second terminal started, there has been a great deal of buzz about the new terminal being the 'most sustainable airport terminal' in the northeast region of India. It was claimed that it will have several sustainable features such as sewage treatment, waste management, rainwater harvesting, solar energy, energy-saving lighting, etc. Similarly, the area inside and outside the airport will be adorned by

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plantation areas and local flora. However, the tall claims start to fall apart, when examined closely.

To begin with, an analysis of the claims made by the Airports Authority of India, taken along with the Environmental Impact Assessment (EIA) report of the new terminal, gives the impression that the sustainability initiatives regarding the new terminal are simply tactics to appease the public, and not genuine in nature. While the new terminal, set to be inaugurated in 2024, might be the most sustainable of all airports in the northeast, that is not a high bar. The outlined initiatives such as energy saving lights, sewage treatments, etc. are extremely basic technologies that have been available for many years. Implementing the same is not out of the ordinary, in fact, it would be concerning if such measures were not implemented at this juncture. Moreover, considering how they are often mentioned together along with other passenger and tourist attractions such as several lifts and elevators, craft fairs inside the Airport, etc., establish such initiatives more strongly as a publicity mechanism.

Additionally, the EIA highlights several areas where there will be environmental impacts due to the new terminal – including aspects such as land use, water consumption and quality, air quality, noise level, and ecology. However, no solid steps to offset these unavoidable impacts are provided, other than stating that efforts will be taken to minimize the impacts as much as possible. There is also no mention by the authorities of a more measurable goal, which is the reduction of carbon emissions or reaching net zero standards. The aspect of ensuring sustainability through the physical layout and design of the Airport, which has the potential to significantly aid aircraft in their emission reduction, is conveniently absent as well.

What Next?

It is not that the efforts undertaken by the GAU Airport authorities are incorrect per se. After all, the pathway to a sustainable and net zero airport would surely include steps such as solar energy production, efficient energy consumption, and adequate waste management. However, the problem lies with the severe lack of planning that the authorities have shown throughout the process. The first step towards creating a sustainable airport, as highlighted in the Airports Council International (ACI) Airport Carbon Accreditation program, is to measure the footprint of the relevant airport. As of now, no comprehensive measurement of the

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carbon and environmental footprint of the overall airport as well as of the new terminal has been done. Without the same, any sustainability effort undertaken would be akin to walking blind.

Any evaluation of the overall environmental impact of the airport must include aspects such as emissions, noise, water quality, resource consumption, energy efficiency, and waste management. By measuring the environmental impacts in such quantifiable manner, a sustainability-based scorecard model may be implemented to ensure sustainable development of airports. An appropriate example of taking such quantifiable data and implementing relevant measures based on the same would be the Zero Net Energy Plan of the San Francisco International Airport (SFO). The first step that the authorities took was to map out the campus of the airport, and develop a plan on how to reduce energy consumption and achieve zero net energy. The plan outlined the steps necessary to reduce consumption as well as to integrate renewable energy to achieve the ultimate goal.

With the new terminal of the GAU Airport set to be inaugurated in the next few months, the best time to conduct such an environmental analysis was perhaps be in 2018, when the construction began. However, the next best time to do so would be now. With the terminal almost complete, the likely emissions and other environmental impacts will be easily measurable, and accordingly, relevant measures might be designed to reduce and offset the same. While the IATA provides exemplary guideline documents on how to achieve the same, ultimately, they merely provide guidance and IATA has no authority to force compliance upon airport administrators. Thus, it is up to the relevant authorities and stakeholders, including the Airports Authority of India, to ensure that necessary and measurable steps with respect to sustainability, and not just publicity stunts, are taken by the airport administration.

Notes & References:

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TIME FOR AN INDIAN NATIONAL SPACE SECURITY POLICY?

Adithya Variath[*]

Abstract

Russia vetoed a UN Security Council resolution aimed at preventing an arms race in outer space, which reflected the growing geopolitical tensions in space activities. The resolution, initiated by the United States and Japan, responded to concerns about Russia's development of nuclear anti-satellite weapons. The Outer Space Treaty prohibits the militarisation of space, but its interpretation regarding "peaceful purposes" remains contentious. Despite ongoing UN efforts, including calls for legally binding measures, space militarisation persists, with major powers like Russia, the United States, and China actively advancing space defence capabilities. The United States and NATO have recognised space as a critical operational domain, while countries like India are also expanding their space military capabilities, which is evidenced by India's successful ASAT test in 2019 and its increasing focus on space security. India's space policy, though still developing, lacks a comprehensive national space security framework, which experts argue is necessary given rising regional tensions, particularly with China. The article posits that a robust space defence strategy could help India mitigate security risks, enhance military capabilities, and foster international space cooperation.

Keywords: ASAT - Indian Space Policy - National Security - Open-ended Working Group - Space Security - USSF

Introduction

On 24 April 2024, Russia vetoed a resolution at the United Nations Security Council calling on all countries to prevent an arms race in outer space. The resolution was drafted by the United States and Japan as a response to reports that Russia was developing a nuclear anti-satellite (ASAT) weapon. Military use has been a key feature of space activities since the launch of Sputnik in 1957, as the event fuelled both the space race and the arms race. States continue to deal with a wide range of conventional and non-conventional security challenges in outer space. Today, outer

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space is becoming a highly contested zone. Space-based defence has become essential to protect valuable space assets from a pre-emptive attack. However, the larger threat is the growing fear of space weapons used in space warfare.

The Outer Space Treaty and UN Efforts

There is also a growing demand for reading the future of ASAT in light of Article 2(4) and Article 51 of the UN Charter and the customary international law principles of necessity and proportionality. The Outer Space Treaty drafted by the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS) was hailed as a significant landmark in man's effort to control the use of atomic weapons and other weapons of mass destruction and to prevent military confrontations on celestial bodies. Article IV of the OST prohibits the State parties from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, installing such weapons on celestial bodies, or stationing such weapons in outer space in any other manner. The most controversial debate about the OST has been over the interpretation of the words "peaceful purposes". Some argue that any military use of satellites is "non-peaceful" while others argue that only "aggressive" use of satellites is non-peaceful. Many states believe that as long as it is not aggressive, any military activity is "use of space for peaceful purposes."

In 2022, during a joint ad hoc meeting of the First Committee (Disarmament and International Security) and Fourth Committee (Special Political and Decolonization), the UN expressed concerns about the growing weaponisation in outer space and called for a multilaterally negotiated and legally binding instrument to prevent an arms race in outer space. The recent Russian veto with one abstention by China in the Security Council rejected the draft resolution which called upon active contribution by all States to ensure peaceful use of outer space and to prevent arms race in outer space. Responsibility of States with major space capabilities is stressed upon under the draft resolution. The need for refraining from actions contrary to UN treaties was also mentioned in the wake of maintaining international peace and security as well as promoting international cooperation.

Russia's UN Ambassador Vassily Nebenziain said that "the resolution is absolutely absurd and politicized", "a cynical ploy with hidden motives" and he added, "it didn't go far enough in banning all types of weapons in space." There is no doubt that the

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adoption of this resolution would have promoted international efforts towards the peaceful use and exploration of outer space. However, geopolitics around the future of weaponisation calls for a critical analysis. In December 2019, NATO leaders recognizing the role of space in enhancing defence and national security declared space a fifth operational domain, alongside air, land, maritime and cyberspace. While NATO has maintained that it would not 'weaponise' space by developing offensive capabilities, the NATO declaration recognized "its importance in keeping us safe and tackling security challenges, while upholding international law". Several superpowers have already institutionalised the militarization of space.

Space Forces, and the Working Group to Reduce Space Threats

Established in 1992, the Russian Space Forces became the first independent space force in the world. In 2019, the United States created the Space Force and Space Command, a specialized branch for pursuing superiority in the space domain. The United States Space Force's (USSF) doctrine states that "in keeping with international law, the United States acknowledges that the use of space is for peaceful purposes." USSF doctrine guides the proper use of military space power and establishes a common framework for strategy development. In December 2023, NASA announced Space Security: Best Practices Guide in order "to bolster mission cybersecurity efforts for both public sector and private sector space activities." The United Kingdom's National Space Security Policy states that "it should be read in conjunction with the Civil Space Strategy and it sets out UK space security needs and interests across Government and the need for close co-operation with our international partners, research organisations and industry."

The debate on space security received global momentum with the 2023 Open-ended Working Group on Reducing Space Threats through Norms, Rules and Principles of Responsible Behaviours. It was convened under General Assembly Resolution 76/231 on "Reducing space threats through norms, rules and principles of responsible behaviours". The Working Group was entrusted with the responsibility of making recommendations on responsible behaviours relating to threats by States to space systems, including on the prevention of an arms race in outer space. The report never saw consensus. The fate of the report reflects the bullish behaviour of states and their reluctance to any form of self-regulation. While it was a new chance for the global actors to build a common understanding, the failure of consensus also

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reflects that growing space-faring nations like India will need to address their own space security concerns by evolving holistic space security policies.

Indian Developments

India is also actively pushing its space technology towards the direction of becoming a space military power. On 27 March 2019, India successfully conducted an ASAT test in its operation code-named Mission Shakti. India joined China, Russia, and the United States which have such capabilities. In 2010, India established the Integrated Space Cell to enhance coordination between the Department of Space and the Indian Armed Forces. In 2018, India set up the Defence Space Agency.

India has not formulated its national space law, however, in 2023, India unveiled its Indian Space Policy (ISP). While scholars have argued that the policy has several inherent defects and inconsistencies, it can be seen as the first step by the state to leverage commercial space capabilities and maximize the potential of the multi-billion-dollar space economy. The 2023 ISP has used the word "national security" only two times. While a civilian space agency-formulated commercial policy need not mention these aspects, space-based intelligence, lunar and cislunar activities, space situational awareness and military communication in positioning, navigation, and timing capabilities need to be formulated in a national security structure in the coming times.

While the demand for national space legislation continues to exist, the next step in line should be developing a space defence strategy and a national space security policy. The fundamental aspect of the policy should be to set up institutional structures that can enhance space situational awareness and counter-space capabilities and to develop guidelines against hostile space activities. It also becomes critical, especially considering India's neighbourhood tensions and the nuclear security trilemma between India, Pakistan and China. Considering the geopolitical and astropolitical tensions in the South Asian region, China's growing space power and space diplomacy have security implications for India. China has expanded the Belt and Road Initiative (BRI) to outer space through the 'Space Information Corridor' or 'Space Silk Road', to provide a variety of satellite-based services to its BRI partners. China has developed a well-structured diversification of the People's Liberation Army (PLA). In April 2024, the PLA reorganized its national security architecture. The PLA now consists of four services, namely, the Army, Navy, Air

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Force, and Rocket Force, and four arms, namely, the Aerospace, Cyberspace, Information Support, and Joint Logistic Support Forces. The head of the United States Space Command warned of China's space programs "breathtakingly fast", it is a cause of concern for its immediate neighbours.

India has also used space as an integral part of its regional policy, for example, the launch of the 'South Asia Satellite' (GSAT-9) in May 2017 was welcomed by fellow SAARC members, except Pakistan. While space-based technology is used for socio-economic development, India's emergence as a regional power to mitigate China's growing interest and power in the Indian Ocean region also lies in the integration of military security with space exploration. India is also expanding its transnational cooperation in strengthening its space diplomacy and space security partnerships with Quadrilateral Security Dialogue, France and others.

Concluding Remarks

Space technology is enhancing India's capability to address both civil and military aspects of space security, security preparedness and military operations. Space assets are also vulnerable to a growing number of orbital, kinetic and electronic warfare and this adds a cybersecurity element to space technologies. India needs a National Space Security Policy, which will focus on embracing technological opportunities and making space-based capabilities more resilient to the risks of operating in space. In the United States, the USSF gets support from commercial partnerships to enhance capabilities in space launch and space sustainment. A national space security policy will also provide infrastructure and logistics support to coordinate military activities with the civil and commercial space programs.

A national space security policy can also help DefSpace start-ups in indigenisation, which can enhance the combat capabilities of the armed forces. A framework for forging space partnerships, building space technology clusters and sustaining terrestrial and on-orbit space systems is the need of the hour, considering India's geopolitical tensions. With the growth of new technologies and emerging players, a national security policy will not only help India build responsible space behaviour architecture but also strengthen its position in the Indo-Pacific.

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EVALUATING THE RESPONSIBILITY OF ICAO TO TACKLE CLIMATE CHANGE

Dr. Deva Prasad M.[*]

Abstract

The current global governance frameworks, such as the UN Framework Convention on Climate Change and the Kyoto Protocol, fail to specifically address aviation emissions, resulting in a regulatory gap. The International Civil Aviation Organisation (ICAO), established under the Chicago Convention of 1944, is the primary body responsible for international aviation law, but has been inadequate in implementing comprehensive climate change strategies. While ICAO introduced the Carbon Offsetting Scheme for International Aviation in 2016, it faces criticism for its reliance on carbon offsetting rather than actual emission reductions and lacks robust legal backing. Additionally, Annex 16 of the Chicago Convention primarily focuses on noise and local air pollution, neglecting broader climate impacts from long-haul flights and aerodromes. To effectively mitigate aviation's environmental footprint, the ICAO must adopt more proactive and comprehensive regulatory actions, drawing inspiration from successful frameworks like the Montreal Protocol. This includes applying climate principles such as the precautionary principle and Common but Differentiated Responsibilities, enhancing international cooperation, and redefining sector-specific responsibilities. The European Union's regional initiatives stand as a positive step, demonstrating how sectoral approaches can align with international agreements. Ultimately, achieving sustainable aviation requires ICAO to strengthen its regulatory mechanisms, address both carbon and non-CO_2 emissions, and foster global collaboration to ensure the long-term economic and environmental sustainability of the aviation sector.

Keywords: CBDR - Chicago Convention - CORSIA - ICAO – UNFCCC

Introduction

International long-haul aviation activity results in a significant number of emissions, leading to dangerous levels of carbon footprints. Needless to say, this significantly high level of carbon emissions has to be controlled. Crafting an effective regulatory

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framework and institutional mechanism would require us to examine the present global governance mechanism. The global commons nature of climate change raises the question of who will bell the cat, thus forming a wicked problem. This article provides an overview of the shortcomings of the United Nations Framework Convention on Climate Change, 1992 (UNFCCC). The role and responsibility of the International Civil Aviation Organisation (ICAO), the most significant international air law institutional mechanism, is highlighted along with the way forward.

Present problem

The gravity of the problem caused by the aviation sector's carbon emissions could be better understood with the statistics, which stipulate that around 15 to 25 per cent of emissions could be traced back to aviation activities by the year 2050.[1] This problem is actuated by the fact that there are currently no scientific and "technological low-carbon alternatives" for aviation fuel and long-haul aviation activities.[2]

Considering that the hyperloop and other mobility solutions have not yet reached the proof-of-concept stage, the double-edged sword issue of lack of feasible technological alternatives and lack of proper regulatory framework for aviation-related carbon emissions continues to trouble humanity. From the regulatory standpoint, the international law order needs realignment. The UNFCCC provides state-level responsibility to reduce carbon emissions from anthropogenic activities. The UNFCCC preamble clarifies that climate change is a common concern of humankind. It also stipulates that the sovereign States are supposed to enact effective "environmental legislation and environmental standards". The States are supposed to ensure international cooperation in accordance with international law.

The UNFCCC does not address international aviation issues as sectoral carbon emission control is left to State environmental regulation. The Kyoto Protocol 1997, which talks about the Clean Development Mechanism (CDM) carbon trading mechanism, is also silent on the sectoral approaches, including the aviation sector. Even though the UNFCCC acknowledges that the aviation sector's impact on climate change needs to be tackled as a framework convention mechanism, the sectoral approach and State responsibility must be tapped to make fresh grounds for mitigation action.[3] The UNFCCC mechanism also faces major challenges because

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the Kyoto Protocol has almost become obsolete. Moreover, the equity and common but differentiated principles under the UNFCCC also haven't been able to deliver international cooperation as the developed countries have been shrugging away from their higher responsibilities.[4] Hence, problems such as carbon emissions from aviation sectors become embroiled in the regulatory gap.

Even though the members of the international community have placed an ambitious aim of zero carbon trajectory through the Paris Agreement of 2015, the national contributions towards carbon reduction are left to the States to decide. Hence, the Paris Agreement also, in principle, toes the line with the need for national regulations to deal with the sectoral problems.

The present format of addressing carbon emission as a State responsibility through an international convention could tackle the problem only on a partial basis. In this context, the European Union (EU) Member States have also taken the initiative to provide a clear solution using regional arrangements for a sectoral approach. The EU initiative could be considered as a major regulatory development. Academic articles in this regard have clarified that such measures would be considered legally relevant and in consonance with UNFCCC, Kyoto Protocol and international aviation law.

Does ICAO have responsibility?

In this regard, the relevance of international aviation law as a field could be analysed with the help of air law conventions and institutional mechanisms. Since the climate change laws have worked only on the concept of State responsibility to determine the sectoral cap for carbon emissions, *lex specialis*, like international air law, could take significant steps in this direction. The aviation sector is primarily governed by the International Civil Aviation Organisation (ICAO) based on the power vested with it through the Chicago Convention of 1944. As an institutional mechanism that has played a significant role in establishing international cooperation, the responsibility of ICAO needs to be analysed in relation to environmental impacts.

Does the ICAO, as an international institution, have an obligation to tackle climate change? Even though the Chicago Convention does not mention ICAO's responsibility to tackle environmental issues, we can derive the responsibility based on the broader mandate of ICAO as provided in Article 44 of the Chicago

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Convention. ICAO is obligated to ensure "the safe and orderly growth of international civil aviation" as provided under Article 44(a) of the Chicago Convention. Moreover, as pointed out, the ICAO could be found to be taking steps to look into sectoral issues as have been highlighted by UNFCCC and Kyoto Protocol. A complementary step by way of ICAO's initiatives to tackle climate change and carbon emissions would be helpful for a better global governance framework to evolve. For the sound and economic functioning of the aviation sector, which is also part of the objectives of ICAO as per the preamble to the Chicago Convention, it is relevant to note that the long-term sustainable operation of long-haul flights depends on strong steps to reduce carbon emissions.

How steps initiated by ICAO are ineffective?

Annex 16 of the Chicago Convention talks about environmental protection measures. This forms one of the major technical annexes to the Chicago Convention. Even though Annex 16 deals with environmental protection, the ICAO had not proactively committed to reducing the impact of climate change by effectively evolving technical standards on all aspects of civil aviation. Annex 16 focuses on the issues relating to noise pollution and local air pollution due to aircraft emissions. The requirement of comprehensively addressing the impact of emissions due to long-haul international flights and the need to deal with the environmental impact of aerodromes were neglected by ICAO. The scholarly observations have pointed out the factor of how the ICAO missed the opportunity to include and evolve guidelines pertaining to climate change impact in a comprehensive manner.

While assessing the institutional responsibility perspective of ICAO, the concept of role responsibility is relevant. According to this concept, ICAO needs to act and take proactive initiatives to reduce the impact of the aviation sector on climate change. However, ICAO has fallen short of discharging this obligation, which is detrimental to the core objective of sustainable civil aviation.

In furtherance of Annex 16, the ICAO Assembly undertook the initiative to declare its global commitment towards limiting carbon emissions from international aviation as a measure to tackle climate change in 2010. Moving forward, the ICAO Assembly agreed to the Carbon Offsetting Scheme for International Aviation (CORSIA) framework in 2016. This is considered as the most significant development in the context of regulatory action from ICAO to combat climate change.

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However, CORSIA is not free from loopholes. Critics have often cited that ICAO has shown an immense lack of urgency in tackling the climate change problem. The academic literature also throws open the lack of support provided to the EU emission trading scheme pertaining to the aviation sector.[5] The current CORSIA policy is more of a carbon offsetting than a reduction scheme. Thus, the actual reduction in carbon emissions is being questioned. Moreover, the lack of legal backing for the Standards and Recommended Practices (SARPs) route through which this scheme is being proposed also raises eyebrows regarding the effectiveness of ICAO's action. The lack of an effective approach to overseeing non-carbon-based emissions, which accelerates climate change, also needs pertinent attention. In this regard, it would also be relevant to note that environmental protection forms an important strategic objective of ICAO, and more proactive action could be expected in activities to reduce climate change impact due to aviation activities.

Analysing the way forward

As Rob Nixon points out the "slow violence concept", and states that the new perils of long-haul flights are mainly invisible. Hence, the strong urge for regulatory action has yet to be manifested. The success of the Montreal Protocol on Substances that Deplete the Ozone Layer 1987 should be understood as an excellent example for ICAO to emulate. The ICAO needs to understand that the long-term economic sustainability of the aviation sector hinges on the regulatory intervention of the ICAO.

At present, ICAO is taking a defensive approach regarding climate change mitigation. The lack of proactive steps needs to be called out. The ICAO Assembly and Council could be used as institutions for re-framing the debate on carbon emission reduction. Though a paradigm shift would be difficult, providing regulatory solutions such as enabling market-linked trading and other nudge mechanisms such as carbon tax/fee or funds for climate change adaptation and enabling technology transfer are feasible options. The fact that the International Court of Justice's advisory opinion in the case of climate change, where the relevance of state obligation has been highlighted, also opens up the way for the UN specialised bodies to take similar advisory opinions to understand more specific sectoral specific responsibilities of the states. Seeking an advisory opinion for ICAO would go a long

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way in clarifying the extent of responsibility the aviation sector's specialised UN body needs to consider.

ICAO needs to look at climate change issues more broadly by addressing non-CO2-based emissions, such as nitrous oxide, and their impact on climate change. The myopic approach could be revamped by understanding other dangerous emissions that could cause climate change, and tackling the same through ICAO's regulatory architecture would be a major achievement in green aviation.

Applying established principles relating to climate change law, such as the precautionary principle and Common but Differentiated Responsibilities (CBDR), needs to evolve more granularly in the aviation sector. ICAO would benefit immensely from looking at the precautionary principle and how it would be required to change and adopt the aviation sector structurally. Major rehauling of the responsibilities of states would be required if CBDR were to be applied. The Unites States, EU, Japan and other developed countries need to take more carbon emission cuts and work towards shouldering financial and technology transfer arrangements so that other countries can move towards a sustainable aviation model. It is worth highlighting that equal opportunity is a factor mentioned in the Chicago Convention preamble, which needs to be considered by the ICAO in devising an action plan for climate change mitigation. In the proposed CORSIA –is the application of CBDR required for proactive measures from developed nations? This remains a question to be clarified.

ICAO needs to step-up cooperation amongst States and encourage state-level measures to battle the impact of climate change. Optimistically, sustainable aviation as a requirement needs to be well-acknowledged by ICAO, and the required regulatory changes may be envisaged. As emphatically mentioned by Richard Flak, a humane form of global governance is much required.[6]

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